BORYCHEV, N.I.; ZAV'YALOV, P.F.; DVORNIKOV, I.S., retsenzent; ZHELEZNOV, B.I., retsenzent; POKROVSKAYA, I.M., red.izd-va; PROZOROVSKAYA, V.L., tekhn. red.; BOLDYREVA, Z.A., tekhn. red.

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[Protection of adolescents' labor] Okhrana truda podrostkov. Izd.2., dop. Moskva, Profizdat, 1963. 93 p. (MIRA 16:8)

(Youth--Employment) (Industrial safety)

KOCHETKOV, V.; ZHELEZNOV, B.L., red.; GALKINA, V.N., tekhn.red.

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(Tatar A.S.S.R.--Collective farms)

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[In the land of plowmen; work experience of theMellia-Tamak Village Soviet in Muslyumovo District, Tatar A.S.S.R.] V kraiu khleborobov; iz opyta raboty Mellia-Tamakskogo sel'skogo Soveta Musliumovskogo raiona Tatarii. Kazan', Tatarskoe knizhnoe izd-vo, 1960. 44 p. (MIRA 14:9)

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KURKIN, M.I.; ZHELEZNOV, B.L., red.; GABDULLAZYANOVA, F.Kh., tekhn.red.

[Costs of collective farm production and ways to reduce them]
Sebestoimost' kolkhoznoi produktsii i put' ee snizheniia.
Kazan', Tatarskoe knizhnoe izd-vo, 1960. 52 p.
(MIRA 14:1)

(Tatar A.S.S.R.--Collective farms--Costs)

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Forests and Forestry

Problems of forest propagation in the steppes as signalized by P. A. Kostychev, Les i step' No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, July 1952. Unclassified.

ANUCHIN, N.P., prof., otv. red.; BRASLAVSKAYA, M.M., red.; DERYABIN, D.I., kand. sel'khoz. nauk, red.; ZHELEZNOV, G.E., kand. sel'khoz. nauk, red.; IVANNIKOV, S.P., kand. sel'khoz. nauk, red.; IVANOV, G.G., red.; LARYUKHIN, G.A., kand. tekhn. nauk, red.; LOSITSKIY, K.B., doktor sel'khoz. nau zam. otv. red.; MIRONOV, V.V., kand. sel'khoz. nauk, red.; RODIONOV, A.Ya., kand. sel'khoz. nauk, red.; TRUBNIKOV, M.M., kand. ekon. nauk, red.; CHEVEDAYEV, A.A., kand. sel'khoz. nauk, red.; SHUMAKOV, V.S., kand. sel'khoz. nauk, red.; YURGENSON, P.B., doktor biol. nauk, red.; TROPIN, I.V., kand. sel'khoz. nauk, red.

[Studying the performance of new machinery in silvicultural work; scientific papers] Issledovanie rabochikh protsessov novykh mashin na lesokul'turnykh rabotakh; nauchnye trudy. Moskva, Izd-vo "Lesnaia promyshlennost'," 1964. 111 p. (MIRA 17:7)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut lesovodstva i mekhanizatsii lesnogo khozyaystva.

1. ZHELEZNOV, G. F.; SOKOLOV, A. I.

2. USSR (600)

4. Forests and Forestry

7. Unsuccessful book on the Tellermanovskiy forest ("Tellermanovskiy forest." Les i step' 4 no. 10, 1952. Reviewed by G. F. Zheleznov, G. F.; Sokolov, A. I. Reviewed by Postoyev, M. (author)

9. Monthly List of Russian Accessions, Library of Congress, January, 1953. Unclassified.

ZHELEZNOV, G.F.

Reclamation of Land

Speed up the gainful use of sandy areas. Les i step' 14 no. 5, 1952

Monthly List of Russian Accessions, Library of Congress, August 1952. Unclassified.

K-5

USSR/Forestry - Forest Cultivation.

Abs Jour : Ref Zhur - Biol., No 9, 1958, 39117

Author : Ol'shanskiy, M.A., Zeldman, D.P., Zheleznov, G.F.

Inst : -

Title : Progress in Theory and Practice of Field Protection of Forest Cultivation. (Results Produced by Cluster Planting of Oak in Experiment Institutions after a Period of 8 Years).

Orig Pub : Agrobiologiya, 1957, No 4, 79-108.

Abstract : The state of oak cluster planting on 458 forest strips (laid in 1949 and 1950), according to data obtained from 64 experiment agricultural institutions, is described. The forest strips are located in 30 oblasts of the RSFSR, Ukraine and Moldavia.
It is indicated that no deterioration in the quality of plantations, based on the growth of the intra species rivalry was noticed.

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Abs Jour : Ref Zhur - Biol., No 9, 1958, 39117.

The more young growths there were in the cluster the better they developed. The growths interlocked faster and the state of the forest strips altogether improved, The cultivation of oak together with various agricultural crops (with the exception of an unsuccessful experiment with alfalfa) had no negative influence in its growth. Compound tables of indexes on the state of cluster crops are given in this study.

Card 2/2

ZHELEZNOV, G.S.

Grinding reamers. Stan. i instr. 36 no.8:24-25 Ag '65. (MIRA 18:9)

S/109/60/005/05/021/021
E140/E435

AUTHORS: Bur'yanov, P.D., Buts, V.P., Kolpachev, Yu.I., Zheleznov, L.F. and Kupchinov, N.F.

TITLE: Letter to the Editor: On the Publication of the Article "Ribbon Electron Beams in a Longitudinal Homogeneous Magnetic Field with Arbitrary Degree of Cathode Screening"

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 5, p 880 (USSR)

ABSTRACT: A brief letter indicates that Alyamovskiy's results (Ref 1) have been previously obtained by Porev at the Taganrog Radio Engineering Institute (Ref 2,3,4). There are 4 Soviet references.

Card 1/1

ZHELEZNOV, M.S.

Famous Soviet inventor. Avtom., telem. i sviaz' 2 no.9:40 S '58.
(MIRA 11:10)

(Treger, Daniil Samuilovich, 1883-)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064630012-7"

ACC NR: AN7002229 SOURCE CODE: UR/9002/67/000/011/0001/0001

AUTHOR: Zheleznov, N. (Correspondent of TASS)

ORG: none

TITLE: In the ocean of knowledge with a reliable compass [Information processing in the USSR]

SOURCE: Gudok, no. 11, 13 Jan 67, p. 1, cols. 2-6 and p. 4, cols. 5-7

TOPIC TAGS: information processing, scientific information, information center

ABSTRACT: In a recent interview, N. Arutyunov, the head of the Administration of Scientific Technical Information and Propaganda of the State Committee of the USSR Council of Ministers on Science and Technology, commented on the USSR Council of Ministers' resolution to establish a general state scientific-technical information system. He said that the successful solution of various technical problems requires a significant improvement in the system of processing scientific-technical information throughout the country. The various branch organs of scientific-technical information are currently the basis for the USSR information service. In 1952, the All-Union Institute of Scientific and technical Information was founded to exploit and process both Soviet and foreign scientific literature. However, the methods of information processing throughout the world have greatly lagged behind the tempo of scientific and technical

Card 1/3 UDC: none

ACC NR: AN7002229

research development. It is clear that the existing system does not satisfy the growing requirements of scientists, technicians, specialists, and inventors. It was noted in the resolution that at the present time, the complete processing of all important Soviet and foreign scientific publications is still not being accomplished, that the time required for information processing is still much too long, and that the institutes that process the information are poorly equipped for the task and must be modernized. At the present time, the workers in scientific laboratories and design offices spend up to 50 per cent of their working time searching for and processing needed information. Therefore, the USSR Council of Ministers has decided to establish a program for the radical improvement of the general state system of the scientific-technical information processing in the period 1966—1970. The ministeries, departments, and councils of ministers of the united republics will be responsible for improving the local information processing agencies so that they may become capable of feeding the necessary scientific and technical data to the general state information network. At the same time, it was decided to create an All-Union Scientific-Technical Information Center with a general state library of microfilms of reports on the most important scientific work being conducted in the USSR today. The center will also register and list all the completed scientific work in the country and publish a systematic review of this work for all of the interested bodies

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in the USSR, i.e., universities, design laboratories, etc. In this connection, Arutyunov spoke of the very acute problems of training cadres of information specialists, of reorganizing the scientific-technical libraries, and the need to automate the processing, storage, and retrieval of scientific-technical information.

SUB CODE: 05/ SUBM DATE: none/ ATD PRESS: 5112

Card 3/3

ZHELEZNOV, N.

Poshekhonov's pendulum. Tekh. molod. 21 no.6:14 Je '53. (MLRA 6:6)
(Foucault's pendulum)

ZHELEZNOV, N.A.

AUTHOR: ZHELEZNOV, N.A.

TITLE: A-U Sci Conf dedicated to "Radio Day," Moscow, 20-25 May 1957. "Principles of Discretization in Theory of Signals Based on New Stochastic Model,"

PERIODICAL: Radiotekhnika i Elektronika, Vol. 2, No. 9, pp. 1221-1224, 1957, (USSR)

For abstract see L.G. Stolyarov.

AUTHOR: Zheleznov, N. A., Real Member of the Society 108-11-1/10

TITLE: On Fundamental Questions of the Theory of the Signals and the Tasks of a Further Development of the Same Based on a New Stochastic Model. (O printsipial'nykh voprosakh teorii signalov i zadachakh yeye dal'neyshego razvitiya na osnove novoy stokhasticheskoy modeli).

PERIODICAL: Radiotekhnika, 1957, Vol. 12, Nr 11, pp. 3-12 (USSR)

ABSTRACT: In this place a crucial analysis of the properties of the model serving as a basis for the modern theory of the signals is given. In this modern theory the signals are looked upon as terms of a plurality of none random-functions of time which constitute in their entity a certain stochastic process. It is shown that the signals with a limited spectrum, as it is assumed in the theory, can principally not be information carriers. This assumption leads to the complete determination of the signals and to the impossibility to form the same in systems practicable in physics. It is shown that the theory of the signals at present shows contradictions: it considers the signals to be information carriers and attributes them,

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On Fundamental Questions of the Theory of the Signals and the Tasks of a Further Development of the Same Based on a New Stochastic Model. 108-11-1/10

at the same time, such properties which such a possibility makes impossible. Therefore a new model for stochastic signals is given in this place. The new theory gives up the assumption of a limitation of the spectrum and the interpretation of the signals as resulting from a stationary stochastic process. This new model keeps all principal properties of the real signal and its properties are the following:

1.) The signals are considered to be a nonsteady stochastic process,
2.) the signal duration T is finite,
3.) the energy spectrum is continuos and differs from zero in the frequency-band $0 \leqslant \omega < \infty$,
4.) the correlation-interval τ_0 is limited, whereby $\tau_{0\,max} \ll T$

is. The tasks for a further development of the theory of the signals are demonstrated. The investigations carried out by the author from 1952 to 1955 point out the possibility to establish a theory of the signals based on the stochastic model explained in this report. There are 1 figure, and 15 references, 11 of which are Slavic.

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On Fundamental Questions of the Theory of the Signals and the Tasks of a Further Development of the Same Based on a New Stochastic Model. 108-11-1/10

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific-technical Society of Radio Engineering and Electrical Communications im. A.S. Popov)

SUBMITTED: May 15, 1957.

AVAILABLE: Library of Congress

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ZHELEZNOV N.A.

109-1-1/18

AUTHOR: Zheleznov, N.A.

TITLE: The Principle of Quantization of Stochastic Signals Having an Unlimited Spectrum and Some Results of the Theory of the Pulse Transmission of Information (Printsip diskretizatsii stokhasticheskikh signalov s neogranichennym spektrom i nekotoryye rezul'taty teorii impul'snoy nepedachi soobshcheniy)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, Nr 1, pp.3-18 (USSR)

ABSTRACT: The Kotelnikov theorem (Ref.1) states that "an arbitrary function F (t), containing frequencies from 0 to Fm, can be represented with an arbitrary accuracy by a set of numbers (values) spaced at intervals equal to 1/2 Fm ". The above representation is not applicable to real signals, since their spectrum is not confined to within a finite band of frequencies. The following new type of representation is therefore considered. Signals are represented by a function

$$v(t) = \sum_{k=0}^{N-1} u_k f(t - k\tau_1), \quad (1)$$

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where u_k are random quantities which are functionally related to the values which a given function $u(t)$ assumes at intervals T_k; $T_k \leqslant T$, where T is the duration of the signal; $f(t - k\tau_1)$ are non-random functions differing from each other by a time displacement equal to a multiple of τ_1. The quantization of signals as represented by Eq.(1) should fulfil the following requirements: (1) a minimum loss of information (due to the representation of the signals by the sum of their elementary components); (2) a maximum fidelity of the representation; (3) functions $f(t-k\tau_1)$ should form an orthogonal system, so that the ensemble of the quantities u_k could be regarded as the coordinates in a signal space; (4) the number of the terms in the expansion (given by Eq.(1)) should be proportional

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to the duration of the signals T, i.e., $N = T/\tau_1$; and (5) an addition of a signal "segment" at a time $t_0 = k\tau_1$, where k is an arbitrary number, should not change the value of $v(t)$ in the "past", i.e. at $t < t_0$. The fidelity of the quantization (representation) of signals can be described by the "root-mean square" criterion; thus, if a series $v^*(t)$ represents a stochastic signal $u^*(t)$, the fidelity is defined as:

$$\nu^* = \frac{1}{T}\int_0^T \Delta^*(t)dt\,, \qquad (2)$$

where $\Delta^*(t) = \left[v^*(t) - u^*(t)\right]^2$, which is the "error" signal. There are two physical systems which can be used to realise the expansion represented by Eq.(1) (see Figs.1a and 1b). In the system of Class A (Fig.1a) a pulse generator N produces very short pulses $g(t)$, which are spaced

at intervals τ_1 ; Φ and Φ_1 are two filters having an impulse response $f(t)$; M is a modulator in which the pulses $g(t)$ are amplitude-modulated by the voltage $u_\Phi(t)$ which appears at the output of the filter Φ . It is shown that the signal at the output of the system is in the form

$$v(t) = \sum_{k=0}^{N-1} \left[\int_{k\tau_1}^{(k+1)\tau_1} u(x)f(x - k\tau_1)dx \right] f(t - k\tau_1) \qquad (6)$$

so that:

$$u_k = \int_{k\tau_1}^{(k+1)\tau_1} u(x)f(x - k\tau_1)dx . \qquad (7)$$

The system of Class B (see Fig.15) is identical with that

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of Class A except that the filter Φ is absent. Consequently, for Class B:

$$u_k = u(k\tau_1) \quad . \tag{8}$$

Properties of the expansion represented by Eq.(1) are stated in four theorems; in particular, it is shown the maximum fidelity in the Class A representation of quasi-stationary signals is achieved when the function $f(t)$ coincides with the first eigen-function of the following integral equation:

$$\int_0^{\tau_1} R(t - t')f_n(t')dt' = \lambda_n^2 f_n(t) \quad , \tag{24}$$

where $R(\tau)$ is the signal correlation function and λ_n^2 is the eigen-value of Eq.(24). The maximum fidelity is given by:

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$$\nu_0 = 1 - \frac{\lambda_1^2}{\tau_1} , \qquad (25)$$

where λ_1^2 is the first eigen-value of Eq.(24); expressions are also derived for the Class B representation (Eq.(32)) and for the case when the function $f(t)$ is a rectangular pulse having a duration τ_1 (Eq.(38)). Representation of the stochastic signals by the Kotel'nikov series:

$$F(t) = \sum_{k=-\infty}^{\infty} F(k\tau_1)\sigma(t - k\tau_1) ,$$

where $F(t)$ is a function whose spectrum extends to Fm and where $\tau_1 = 1/2F_m$, and by a series:

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$$v(t) = \sum_{k=-\infty}^{\infty} u(k\tau_1)\sigma(t - k\tau_1) \qquad (50)$$

is also analysed; it is shown that the Kotel'nikov series representation gives a maximum fidelity (Eq.(47)) which is twice higher than that of the series expressed by Eq.(50) (see Eq.(51)). The main disadvantage of the Kotel'nikov-series description is that the filters necessary for its realisation are not physically realisable. From the above analysis it is concluded that quasistationary signals having an infinite spectrum can be transmitted by means of discrete quantities which are spaced at intervals τ_1 ; the fidelity of their reproduction can be made arbitrarily near to the limiting (maximum) fidelity ν_0 , provided τ_1 does not exceed the correlation interval, and the duration of the signal is much greater than the correlation interval. The paper contains 2 figures, 2 appendices

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(proofs of two of the theorems) and 11 references, six of which are Russian, 2 English, 2 French and 1 Hungarian.

SUBMITTED: May 24, 1957

AVAILABLE: Library of Congress

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05369

SOV/106-59-8-1/12

AUTHOR: Zheleznov, N.A.

TITLE: The Limit Transmitting Capacity of Physically-realisable Communication Systems

PERIODICAL: Elektrosvyaz', 1959, Nr 8, pp 3 - 13 (USSR)

ABSTRACT: Shannon has shown (Ref 1) that the capacity C of a communication system is related to the system parameters by:

$$C = \Delta f_o \log_2\left(1 + \frac{P_c}{P_{\text{ш}}}\right) \text{(bits per sec)} \qquad (1)$$

where Δf_o is the passband of the channel, P_c and $P_{\text{ш}}$ are, respectively, the mean signal power and the mean fluctuation noise power of the channel. Assuming that the channel is a low-frequency filter type, then, instead of Δf_o, the boundary frequency f_o can be written in Eq (1). This theory assumes that the transfer coefficient $K_o(f)$ of the channel has the following property:

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$$|K_0(f)| = \begin{cases} |K(f)|, & f < f_0 \\ 0, & f > f_0 \end{cases} \quad (2)$$

In practice, the conditions of Eq (2) cannot be realised physically. Also, functions which have a finite spectrum are statistically determined processes and thus do not correspond in principle to information signal-carriers (the author - Ref 4). But these are not the only deficiencies in the model of the signals and the model of the channel on which Shannon's theorem is based; the value f_0 is indeterminate and is specified only through an "intuitive" factor. Therefore, the actual problem is to consider the capacity of a communication system based on a signal model and a channel model which possess in principle the properties of real signals and of physically-achievable systems and which will enable accurate quantitative relationships

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to be obtained.

Under these conditions, the limit capacity is determined by the maximum number N of orthogonal functions $\{f_n(t)\}$, from which the signals at the output of the channel can be constructed:

$$v(t) = \sum_{n=1}^{N} v_n f_n(t) \qquad (4)$$

and for signals of an effective communication system the random values $\{v_n\}$ must be uncorrelated. As shown by D.V. Ageyev (Ref 6), the maximum possible number of orthogonal functions, which satisfy the following conditions - 1) they are located in a time interval T,

2) their energy has maximum concentration in the frequency band Δf,

 3) as the interval T increases without limit, their

energy is concentrated completely into the frequency band, Δf, is given by:

$$N_{Max} = 2T\Delta f \quad (5).$$

A characteristic of the new model of the communication channel is that the self-correlation time τ_K is assumed finite and small in comparison with the duration of the signals in the channel. The transfer coefficient differs from zero over the whole frequency band $(0, -\infty)$, except perhaps at specific points in the band, and the system is physically realisable in the Pailey-Wiener sense. It is now assumed that, at the time instant $t = t_o$, quasi-stationary signals $u(t)$ with a correlation function $R(\tau)$ and a correlation interval τ_o are applied at the input to

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the channel. Then the following theorem, which is proved in the appendix, is true.
Theorem 1. When $t - t_o \geq \tau_o + \tau_K$ the correlation function of the signals at the output of a linear channel is independent of the time and equals the "combination" of the correlation function of the output signals with the correlation function of the channel signals proper:

$$R_{BblX}(\tau) = \int_{-\tau_0}^{\tau_0} R(y)L(y - \tau)dy \qquad (7).$$

The correlation interval of the signals at the output is equal to the sum of the correlation interval of the input signals and the self-correlation time of the channel:

$$\tau_{0\ BblX} = \tau_0 + \tau_K \qquad (8).$$

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From this theorem, it is shown that signals, the correlation interval of which is much smaller than the self-correlation time of the system, are for a given channel the physical analogue of a mathematical idealisation - "white" noise. Also, from the theorem, it is shown that the maximum possible number of uncorrelated elements of the signals at the output of a linear channel is given by:

$$N_K = \frac{T}{\tau_0 + \tau_K} \qquad (9).$$

For a given channel N_K will be greater, the smaller the correlation interval of the input signals compared with the self-correlation time of the channel. Therefore, it is convenient to use electrical oscillations for which $\tau_0 \ll \tau_K$ as information carriers. Then $N_K \leq N_o = T/\tau_K$.

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It is necessary to establish the connection between the maximum possible value $N_{0\ Max}$ and the parameters of the frequency characteristic of the channel and to find under what conditions $N_{0\ Makc}$ is obtained.

Theorem 2. The maximum possible number of uncorrelated signal elements at the output of a linear channel equals:

$$N_{0\ Max} = 2T\Delta f_K \qquad (11)$$

If the function of the self-correlation of the channels signals $L(\tau)$ is not negative, then $N_0 = N_{Max}$ when $L(\tau)$ has uneven symmetry relative to the mean of the correlation interval $\tau_K/2$, i.e.:

$$L\left(\frac{\tau_K}{2} + \tau\right) - L\left(\frac{\tau_K}{2}\right) = L\left(\frac{\tau_K}{2}\right) - L\left(\frac{\tau_K}{2} - \tau\right) \qquad (12)$$

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where $0 \leqslant \tau \leqslant \tau_K/2$.

This theorem is proved in the appendix.

From Theorem 2, it follows that the channel signals have the greatest information transfer, when $N_{Max} = N_{0\ Makc}$, i.e. when $\Delta f = \Delta f_K$.

It is then shown how the condition $N_{Mack} = N_{0\ Max}$ can be obtained.

Theorem 3. The limit transmission capacity of a physically-realisable communication system in the presence of additive noise is given by:

$$C_o = \Delta f_K \log_2 \left(1 + \frac{E\zeta^2}{E\eta^2} \right) \quad \text{(bits per sec)} \qquad (15)$$

where Δf_K is the effective passband of the channel, $E\zeta^2$ and $E\eta^2$ are, respectively, the mean signals power

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and the mean noise power.

This theorem is proved in the article.

Theorem 4. The limit transmission capacity of a physically-realisable communication system in which there is interference correlated with the signals, as well as fluctuation noise, is given by:

$$C_K = \Delta f_K \log_2 \left[1 + \frac{E\zeta^2}{E\eta^2 + E\chi^2} \cdot \frac{\left(1 + R_{\zeta\chi}\sqrt{\frac{E\chi}{E\zeta^2}}\right)^2}{1 - R^2_{\zeta\chi}\frac{E\chi^2}{E\eta^2 + E\chi^2}} \right] \qquad (18)$$

where $E\zeta^2$, $E\eta^2$ and $E\chi^2$ are, respectively, the mean

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signal power, the mean fluctuation noise power and the mean power of the correlated interference:

$$R_{\xi\chi} = \frac{E\xi\chi}{\sqrt{E\xi^2 E\chi^2}}$$

is the normalised coefficient of correlation between the vector components of the signals ξ and of the interference χ. This theorem is proved in the appendix.

The theorems given in the article coincide in structure with Shannon's theorem but in contra-distinction to the latter, the value of the passband of the channel is accurately determined and can be easily calculated from the channel characteristics in either graphical or analytical form. The theorem on the limit transmission capacity in a channel in the presence of both fluctuation noise and interference

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correlated with the signals enables the effect of a change in the passage conditions, or in the signal distortions, to be evaluated.

There are 1 figure and 18 references, of which 7 are English, 1 German and 10 Soviet.

SUBMITTED: April 23, 1959

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AUTHOR: Zheleznov, N.A. SOV/109-4-3-3/38

TITLE: Certain Problems of the Spectral-Correlation Theory of Non-Stationary Signals (Nekotoryye voprosy spektral'no-korrelya tsionnoy teorii nestatsionarnykh signalov)

PERIODICAL: Radiotekhnika i Elektronika, Vol 4, Nr 3, 1959, pp 359-373 (USSR)

ABSTRACT: One of the quantities describing the properties of non-stationary signals is the so-called instantaneous power spectrum; this has been considered by a number of authors: C.H. Page, D.G. Lampard, C. Rayevskiy and A. Kharkevich (Refs 2,3,4 and 5). During 1953/55, the author made an attempt to devise a systematic spectral-correlation theory of non-stationary signals, and some of the results of his work were published (Ref 6). The present work should be regarded as a further development of the earlier investigations. The signals considered have a finite duration T and can be represented as:

$$u_T(t) = \begin{cases} u(t), & \frac{-T}{2} \leqslant t \leqslant \frac{T}{2}, \\ 0 & \text{for other } t, \end{cases} \quad (1)$$

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under the assumption that $E(u^2,(t))$ is less than a certain quantity C_o, where E denotes the mathematical expectation. The non-stationary signals $u_T(t)$ have the spectral distribution of the Kolmogorov-Levy type (Ref 8) which is defined by Eq (3) and where $Z(\omega)$ is a complex random function of frequency ω. The time correlation function of the signals is defined by Eq (4) where Z^* is a conjugate random function. It is also necessary to define a frequency correlation function, Q_T, for the signal. The relationship between Q_T and R_T (the time correlation function) is given by:

$$R_T(t_1,t_2) = \frac{1}{4\ 2} \int_{-\infty}^{\infty} e^{j(\omega_1 t_1 - \omega_2 t_2)} Q_T(\omega_1,\omega_2) d\omega_1 d\omega_2 ,$$

$$Q_T(\omega_1,\omega_2) = \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} e^{-j(\omega_1 t_1 - \omega_2 t_2)} R_T(t_1, t_2) dt_1 dt_2 . \qquad (7)$$

It is also useful to determine for the signals a function of instantaneous power spectrum, Φ. This is defined by Eq (9). For the purpose of further analysis, the

following notation is adopted; $t = t_2$, $\tau = t_1 - t_2$, $\omega = \omega_1$, $\Omega = \omega_2 - \omega_1$ and $\nu = \Omega/2\pi$. It is now shown by means of a theorem that the instantaneous power spectrum Φ_T of non-stationary signals is related to the time correlation function R_T by a pair of Fourier transforms which are in the form of Eq (14); the relationship between Φ_T and the frequency correlation function Q_T is expressed by Eq (15). The average power spectrum over an interval T is defined by Eq (21), while the average time correlation function is given by Eq (22). Consequently the relationship between the average values of Φ_T and R_T are given by Eq (23). The ergodic properties of non-stationary signals are demonstrated in three theorems. The first theorem states that if Eq (28) is valid, the average value of the stochastic signals for $T \to \infty$ coincides with the average mathematical exception expressed by Eq (29); a proof of this theorem is given in the Appendix. The second theorem states that if Eq (30) is valid, the function of time correlation of the non-stationary signals for $T \to \infty$ tends to the average

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correlation function expressed by Eq (31). The third theorem shows that from the validity of Eq (32), it follows that the metric spectrum of non-stationary signals for $T \to \infty$ coincides with the average power spectrum of the signals, as expressed by Eq (33). If the non-stationary signals $u(t)$ are of the separable type, that is, the time correlation function can be represented in the form of Eq (34), it is shown that the sums and products of such signals are also separable. If the signals are separable with respect to t_1 and t_2, their time and frequency correlation functions are expressed by Eqs (37) and (38). If the signals are separable with respect to t and τ, their average power correlation spectrum is given by Eq (55). If the signals are separable with respect to $a(t_1 + t_2)$ and $b(t_1 - t_2)$, their time and frequency spectra are given by Eqs (60) and (61). The above spectral-correlation theory of non-stationary signals can be regarded as an extension of the existing theory of stationary functions. For the description of non-stationary signals it was necessary, however, to introduce

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two types of power characteristics: (1) the functions which are time dependent and (2) the functions which describe the statistical properties over the interval of the signal duration. The author expresses his gratitude to A.N. Kolmogorov and Yu.V. Linnik for their remarks on his lecture which he presented in 1955 at the All-Union Conference, on the theory of probability; these remarks were useful in the formulation of certain results given in this work.

Card 5/5 There are 11 references, 3 of which are English, 2 French and 6 Soviet.

SUBMITTED: July 5, 1958

ZHELEZNOV, N.A.

Concerning the engineering and theory of informational electric networks. Izv. vys. ucheb. zav.; radiotekh. 4 no.1:3-10 Ja-F '61. (MIRA 14:4)

1. Rekomendovana kafedroy teoreticheskoy radiotekhniki Leningradskogo vysshego inzhenernogo morskogo uchilishcha im. admirala S.O. Makarova.

(Telecommunication)

24853 S/106/61/000/005/001/006
A055/A133

6.9200 (1031)

AUTHOR: Zheleznov, N. A.

TITLE: The time correlation interval and its relationship with the power spectrum parameters

PERIODICAL: Elektrosvyaz', 15, no. 5, 1961, 3 - 8

TEXT: The time correlation interval τ_0 is, as determined by the author in an earlier article [Ref. 1: O printsipial'nykh voprosakh teorii signalov i zadachakh yeye dal'neyshego razvitiya na osnove novoy stokhasticheskoy modeli (On the Principal Problems of the Signal Theory and the Problems of its Further Development Based on a New Stochastic Model, Radiotekhnika, 1957, v. 12, no. 11] the time interval during which correlation couplings die down completely in signals. Thus, the magnitudes of signals at the instants t_1 and t_2, separated by interval $|t_1 - t_2| \geqslant \tau_0$, will be non-correlated. The number of non-correlated elements $N_0 = T/\tau_0$ (where T is the duration of signals) being an important factor for radio-communications, it is necessary to investigate the parameters on which N_0 depends, and the conditions allowing to obtain the maximum possible number of non-correlated elements. Since the direct measurement of τ_0 is not

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always possible, it is of interest to find relationships permitting to deduce the correlation interval from the power spectrum, the determination of which is practically not difficult. This problem was already dealt with by the author [Ref. 2: N. A. Zheleznov. Energeticheskiye kharakteristiki i interval korrelyatsii stokhasticheskikh signalov, v chastnosti rechevykh signalov. (Energy characteristics and correlation interval of stochastic signals, and in particular of voice signals), Sbornik "Voprosy Statistiki Rechi", edited by L.G.U., 1958]. The present article is a further development of this work. In the general case of arbitrary non-stationary signals, the time correlation function $R_T(t, \tau)$ depends not only on τ, but also on the actual moment t. In the particular case of quasi-stationary signals, $R_T(t,\tau) = R_T(\tau)$, i.e., it is independent on t for $-\frac{T}{2} + \tau_0 \leqslant t < \frac{T}{2} - \tau_0$; $R_T(\tau)$ is here an even function of τ, different from zero within the interval $(-\tau_0, \tau_0)$. Arbitrary non-stationary signals are characterized by the spectrum of instantaneous power $\phi_T(f,t)$ where f is the actual frequency, the spectrum being related to $R_T(t, \tau)$ by the Fourier transformation formulae:

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$$\left.\begin{aligned}\Phi_T(f,t)&=\int_{-\infty}^{\infty}R_T(t,\tau)e^{-2\pi jf\tau}d\tau\\ R_T(t,\tau)&=\int_{-\infty}^{\infty}\Phi_T(f,t)e^{2\pi jf\tau}df\end{aligned}\right| \quad (1)$$

In the case of quasi-stationary signals, $\Phi_T(f,t) = \Phi_T(f)$, and formulae (1) become Fourier cosine-transformation formulae. Correlation interval in the case of quasi-stationary signals. - The author begins by introducing the expression

$$\Delta f_{eff}=\frac{1}{\Phi_{max}}\int_{0}^{\infty}\Phi_T(f)\ df, \quad (2)$$

for the effective frequency-band of the power spectrum. Taking into account this

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expression, he offers his Theorem I, stating that $\tau_{0\,min} = \frac{1}{2\Delta f_{eff}}$ (3)
and that, if the correlation function of quasi-stationary signals is non-negative, $\tau_0 = \tau_{0\,min}$

$$R_T\left(\frac{\tau_0}{2} + \tau\right) - R_T\left(\frac{\tau_0}{2}\right) = R_T\left(\frac{\tau_0}{2}\right) - R_T\left(\frac{\tau_0}{2} - \tau\right), \quad (4)$$

where $0 \leq \tau \leq \tau_0/2$; the correctness of these statements was proved by the author in another of his earlier articles [Ref. 6: N. A. Zheleznov. Predel'naya propusknaya sposobnost' fizicheski osushchestvymykh sistem svyazi. (Limit Throughput of Physically Feasible Communication Systems) Elektrosvyaz', 1959, no. 8]. From Theorem I it is possible to deduce that $N_{0\,max.} = 2T\Delta f_{eff}$ (5)
In the case of quasi-stationary signals, this important parameter depends, therefore, only on the duration of signals and on the effective frequency-band of the power spectrum. As an example of quasi-stationary signals the correlation interval of which reaches the smallest possible value, the author cites signals with the following correlation function:

$$R_T(\tau) = R_T(0)\left(1 - \frac{|\tau|}{\tau_0}\right), \quad 0 \leq |\tau| \leq \tau_0 \quad (6)$$

As was already shown by the author [Ref. 3: N. A. Zheleznov. Nekotoryye voprosy

spektral'no-korrelyatsionnoy teorii nestatsionarnykh signalov (Some Problems of the Spectrum Correlation Theory of Non-Stationary Signals) Radiotekhnika i Elektronika, 1959, v. IV, no. 3], arbitrary non-stationary signals $U_T(t)$ can be compared to quasi-stationary signals equivalent to them in as much as their correlation function and power spectrum coincide respectively with the average correlation function $\bar{R}_T(\tau)$ and the average-power spectrum $\phi_T(f)$ of signals $U_T(t)$. It is evident that the above results hold for the correlation interval $\bar{\tau}_0$ of the average correlation function $\bar{R}_T(\tau)$. The non-stationary signals having an average correlation function like (6) will be signals representing a sequence of rectangular pulses of duration $\bar{\tau}_0$ (with random non-correlated amplitudes ξ_k), occuring at moments t_k, i.e.;

$$u_T(t) = \sum_{k=1}^{N} \xi_k \Pi(t - t_k), \tag{7}$$

where

$$\Pi(t) = \begin{cases} 1, & 0 < t < \bar{\tau}_0 \\ 0 & \text{for other values of } t. \end{cases} \tag{8}$$

It is interesting to find a relationship between $\bar{\tau}_0$ and the maximum value of the actual correlation interval of signals $U_T(t)$. In the general case, the following estimate is true:

$$\tau_{0\ max.} \geq \bar{\tau}_0 \tag{9}$$

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which results, according to Theorem I in::

$$\tau_{0\,max} = \frac{1}{2\,\Delta\,\bar{f}_{eff}} \qquad (10)$$

where $\Delta\,\bar{f}_{eff}$ is the effective frequency-band of the average-power spectrum of the considered non-stationary signals. The following relationship is arrived at by the author in one of his previous articles [Ref. 6]

$$\tau_0 = \tau_{0\,max}\left[\Phi_0(0) + 2\sum_{n=1}^{\infty}\Phi_0(nf_0)\right], \qquad (11)$$

where

$$\Phi_0(f) = \frac{\Phi_T(f)}{\Phi_M} \qquad (12)$$

is the normalized power spectrum, and $f_0 = 1/\tau_0$. Formula (11) can be used for the calculation of correlation interval by the method of successive approximations. In a practical calculation of the correlation interval from an experimentally determined power spectrum, only the section of the spectrum corresponding to a limited frequency-band is known. The author shows that, if the calculation covers the spectrum-section containing 70 - 80% of the power of the signals, the error will not exceed 10%. Applying his results to the determination

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of the correlation interval of voice signals (Russian speech), the author finds that, in this case, $\tau_0 > 0.55$ milliseconds. Expression (11) allows even a more precise determination ($\tau_0 \approx 3.3$ milliseconds). Actual correlation interval in the case of arbitrary non-stationary signals. - In the general case, the actual time correlation function R_T (t,) is an odd function of τ. It is necessary therefore to consider separately (Fig. 2):

1) - τ_{01} (t) - correlation interval "from the right", i.e., for > 0;
2) - τ_{02} (t) - correlation interval "from the left", i.e., for < 0;
3) - full correlation interval $\tau_0 (t) = \tau_{01} (t) + \tau_{02} (t)$.

The author begins by considering the convolution of the actual correlation function

$$R'_T(t, \tau) = \int_{-\infty}^{\infty} R_T(t, x) R_T(t, x + \tau)\, dx, \qquad (14)$$

which is an even function of τ. He shows that $R'_T (t, \tau)$, considered as a function of τ for a fixed value of t, has all the essential properties of the correlation function of quasi-stationary signals. The correlation interval for $R'_T (t, \tau)$ will be $\tau_{01} (t) + \tau_{02} (t) = \tau_0 (t)$. By analogy with (2), the author writes:

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$$\Delta f_s(t) = \frac{1}{|\Phi_T(f,t)|^2_m} \int_0^\infty |\Phi_T(f,t)|^2 \, df, \quad (16)$$

(where $|\Phi_T(f,t)|^2_{max}$ is the maximum value of the square of the spectrum modulus), and then enounces his Theorem II, i.e.:

$$\tau_o(t)_{min} = \frac{1}{2\Delta f_{eff}(t)} \quad (17)$$

If the convolution of the time correlation function $R'_T(t,\tau)$ is non-negative, $\tau_o(t) = \tau_o(t)_{min}$ in the case of $R'_T(t,\tau)$ having an odd symmetry with respect to the center of the full correlation interval, i.e.

$$R'_T\left(t, \frac{\tau_o(t)}{2} + \tau\right) - R'_T\left(t, \frac{\tau_o(t)}{2}\right) =$$

$$= R'_T\left(t, \frac{\tau_o(t)}{2}\right) - R'_T\left(t, \frac{\tau_o(t)}{2} - \tau\right) \quad (18)$$

where $0 \leqslant \tau \leqslant \frac{\tau_o(t)}{2}$. It ensues from this theorem that, for a given t, the correlation interval "from the right" or "from the left" can be as small as conceivable, but that the minimum value of the full correlation interval is limited by the value $\tau_o(t)_{min}$ and is determined by the effective frequency-band of the instantaneous power spectrum. The following relationship, analogous to (11), is also valid in this case:

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The time correlation interval and its relationship ... S/106/61/000/005/001/006 A055/A133

(19)

where $|\phi_0(f,t)|^2$ is the normalized square of the modulus of the instantaneous power spectrum, and $f_0(t) = \frac{1}{\tau_0(t)}$. Arbitrary non-stationary signals have the greatest possible number of non-correlated elements when their actual correlation function satisfies the conditions set by Theorem II. These conditions are satisfied, for instance, when

$$R_T(t,\tau) = \begin{cases} R_T(t,0), & -\tau_{o2}(t) \leq \tau \leq \tau_{01}(t) \\ 0 & \text{for other values of } \tau \end{cases}$$

In his conclusion, the author emphasizes the following point: his analysis proves that the practical calculation of the time correlation interval, based upon an experimentally determined spectrum, can be effected with a satisfactory precision. There are 2 figures and 10 references, 8 Soviet-bloc and 2 non-Soviet-bloc. The two references to English-language publications read as follows: Lampard. Definitions of "bandwidth" and "time duration" of signals which are connected by an identity. Trans. IRE, 1956, CT-3, no. 4 and Shannon, mathematical theory of communication. BSTJ., 1948, v. 27, no. 3 - 4.

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24853 S/106/61/000/005/001/006

The time correlation interval and its relationship ... A055/A133

SUBMITTED: July, 13, 1960.

[Abstracter's note: Subscripts eff (effective), max (maximum), min (minimum), stand for the original Э (effektivno), м (maksimum), мин (minimum)]

Figure 2:

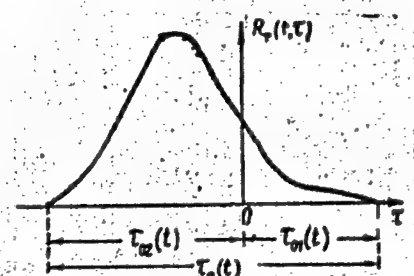

Рис. 2

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40906
S/106/62/000/010/001/002
A055/A101

6,7000

AUTHOR: Zheleznov, N.A.

TITLE: Carrying capacity of two classes of information channels with randomly varying parameters

PERIODICAL: Elektrosvyaz', no. 10, 1962, 3 - 8

TEXT: Two classes of channels are examined under the assumption that random variation of the parameters leads to the emergence of additive interferences, correlated (first class) or noncorrelated (second class) with the signals. Refering to his earlier works [Elektrosvyaz', no. 8, 1959) and Nekotoryye voprosy teorii informatsionnykh elektricheskikh sistem (Some problems regarding the theory of information electrical systems) Izd. LKVVIA, 1960], where an expression was found for the carrying capacity C_k of a channel in the presence of fluctuation interferences and additive interferences stationarily correlated with the signals, the author calculates the carrying capacity of the two classes of channels considered in this article. For the first class, the carrying capacity is determined as the mathematical expectation from a set of channels with con-

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stant parameters and additive stationarily correlated interferences:

$$C_1 = E\{C_k\} = \int_{-1}^{1} p(R_1)\, C_k(R_1)\, d R_1, \tag{4}$$

where $p(R_1)$ is the probability density function for the mutual correlation coefficient $R_1 = \frac{E\{\xi \varkappa\}}{\sqrt{P_{sign} P_{cor}}}$, P_{sign} and P_{cor} being, respectively, the average powers of the signals $\xi(t)$ and of the additive correlated interferences $\varkappa(t)$. For the second class and for a fixed P_{ncor} (average power of the noncorrelated additive interferences), the carrying capacity of the channel is:

$$C = \Delta f_k \log_2 \left(1 + \frac{P_{sign}}{P_{fl} + P_{ncor}}\right), \tag{5}$$

where P_{fl} is the average power of the fluctuation interferences and Δf_k is the effective transmission band of the channel. Introducing the probability

density function $p\ (P_{ncor})$, the author finds:

$$C_2 = E\ \{C\} = \int_{P_{min}}^{P_{max}} p\ (P_{ncor})\ C\ (P_{ncor})\ d\ P_{ncor} \quad . \qquad (6)$$

He proves next the following theorems: 1) The carrying capacity of the channels of the first class with a symmetrical (with respect to zero) probability density curve $p\ (R_1)$ is always greater than the carrying capacity of a channel with constant parameters subjected to fluctuation interference with an average power equal to $P_{f1} + P_{cor}$. 2) The carrying capacity of channels of the second class with a symmetrical (with respect to $E\ \{P_{ncor}\}$) probability density curve $p\ (P_{ncor})$ is always greater than the carrying capacity of a channel with constant parameters subjected to fluctuation interferences with an average power equal to $P_{f1} + E\ \{P_{ncor}\}$. The estimates as given by these theorems are valid only if the corresponding probability density functions are symmetrical. Examples of calculation of the carrying capacity of channels of the first and second classes are given for some particular cases.

SUBMITTED: July 5, 1962

ZHELEZNOV, Pavel

Man who looked ahead. Tekh. mol. 28 no. 3:7 '60. (MIRA 14:4)
(Tsiolkovskii, Konstantin Eduardovich, 1857-1935)

ZHELEZNOV, N.A.

Use of an electric integrator for the evaluation of the reservoir properties of a reservoir from the production data of the first prospecting wells. Nauch.-tekh. sbor. po dob. nefti no.19:85-90 '63.

Determination of the mean parameter values of a uniform elastic reservoir using electric models. Ibid.:91-97

(MIRA 17:8)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.

ALEKSEYEVA, Ye.I., kand. sel'khoz. nauk; BUZINOV, P.A., kand. sel'khoz. nauk; VODOLAGIN, V.D.; VOLKHOVSKAYA, U.V.; GLUSHCHENKO, N.N., kand. biol. nauk; GURVICH, N.L., doktor biol. nauk; ZHELEZNOV, P.A., kand. sel'khoz. nauk; KSENDZ, A.T.; LESHCHUK, T.Ya.; LUK'YANOV, I.A., kand. sel'khoz. nauk; MAYCHENKO, Z.G., kand. sel'khoz. nauk; TANASIYENKO, F.S., kand. khim. nauk; ZNAMENSKIY, M.P.; PERSIDSKAYA, K.G.; PODLESNOVA, A.F.; ROGOCHIY, I.Ya.; REZNIKOV, A.R.; SHUL'GIN, G.T.; KHOTIN, A.A., doktor sel'khoz. nauk; LAPSHINA, O.V., red.; MINENKOVA, V.R., red.; MAKHOVA, N.N., tekhn. red.; BALLOD, A.I., tekhn. red.

[Aromatic plants] Efiromaslichnye kul'tury. Moskva, Sel'khozizdat, 1963. 358 p. (MIRA 16:12)
(Ukraine—Aromatic plants)

ZHELEZNOV, P.A.

Investigating on an electronic integrator the effect of nonuniformity on the determination of the parameters of an oil-bearing bed. Nauch.-tekh. sbor. po dob. nefti no.25:86-89 '64. (MIRA 17:12)

1. UkrNIIGIPROneft'.

POLIKARPOVICH, M.; ZHELEZNOV, V., prepodavatel'; IVANOV, V., nauchnyy sotr.

Serious lesson. Sov.profsoiuzy 18 no.14:15-16 Jl '62.
(MIRA 15:7)

1. Starshiy instruktor Organizatsionno-instruktorskogo otdela Vsesoyuznogo tsentral'nogo soveta profsoyuzov (for Polikarpovich).
2. Moskovskaya vysshaya zaochnaya shkola profesional'nogo dvizheniya (for Zheleznov, Ivanov).
(Stavropol Territory--Trade unions--Officers)

ZHELEZNOV, V.M.

Complex metal mineralization in the northern part of the Democratic Republic of Vietnam. Uzb.geol.zhur. 6 no.4: 30-35 '62. (MIRA 15:9)

1. Kompleksnaya geologo-s"yemochnaya polevaya ekspeditsiya Glavnogo upravleniya geologii i okhrany nedr pri Sovete Ministrov Uzbekskoy SSR.

(Vietnam, North—Ore deposits)

ZHELEZNOV, V.M.

Lower Carboniferous sediments in the Kul'dzhuk-Tau (southwestern Kyzyl Kum). Trudy Uz. geol. upr. no.2:7-8 '62. (MIRA 16:8)
(Kul'dzhuk-Tau--Geology, Stratigraphic)

ZHELEZNOV, V.M.

Some characteristics of Quaternary tectonic movements in the southwestern Kyzyl Kum (Auminza-Tau and Kul'dzhuk-Tau). Trudy Uz. geol. upr. no.2:47-49 '62. (MIRA 16:8)
(Kyzyl Kum--Geology, Structural)

CHEKHOVICH, V.D.; SOLOV'YEVA, M.N.; ZHELEZNOV, V.M.; RYVKIN, M.L.; STARODUBTSEVA, A.S.; STUKOVA, K.V.; URMANOV, Kh.Kh.

New data on the Devonian of Kyzyl-Kum. Dokl.AN SSSR 107 no.1: 149-150 Mr '56. (MIRA 9:7)

1.Uzbekskoye geologicheskoye upravleniye. Predstavleno akademikom D.V.Nalivkinym.
(Kyzyl-Kum--Geology, Stratigraphic)

ZHELEZNOV, Yakov Grigor'yevich

[Monetary income and its distribution in collective farms of Chuvashia ASSR] Denezhnye dokhody i ikh raspredelenie v kolkhozakh Chuvashskoi ASSR. Cheboksary, Chuvashskoe gos. izd-vo, 1959. 51 p. (MIRA 14:5)
(Chuvashia--Collective farms-- Income distribution)

ZHELEZNOV, Ye.

Phtivasid. Nauka i zhizn' 20 no.5:37 My '53. (MLRA 6:6)
(Tuberculosis)

USSR/Medicine - Antibiotics

Card : 1/1

Authors : Zheleznov, E.

Title : New antibiotics. Ecmonovitsillin and Novotsillin

Periodical : Nauka i Zhizn', 6, page 32, June 1954

Abstract : The development of two new penicillin base antibiotics, Ecmonovitsillin and Novotsillin, are described. The new antibiotics were proven to have a much longer lasting effect than penicillin and were successfully adopted by the medical circles of the USSR in the treatment of [illegible], grippe complications, encephalitis etc.

Institution : ....

Submitted : ....

ZHELEZNOV, E.

USSR/Miscellaneous

Card 1/1

Author : Zheleznov, E.

Title : New vaccines

Periodical : Nauka i Zhizn' 21/3,48, Mar/1954

Abstract : The All-Union Scientific-Research Institute of Experimental Veterinary Medicine is working on new vaccines for animals. A disease called "false rabies" is under special study along with diseases especially affecting hogs.

Institution : ....

Submitted : ....

ZHELEZNOV, Ye.

A new medical apparatus. Nauka i zhizn' 22 no.8:26 Ag'55.(MIRA 8:10)
(Electrodiagnosis)

ZHELEZNOV, Ye.

25-7-34/51

AUTHOR: Zheleznov, Ye.

TITLE: Apparatus for the Defibrillation of the Heart (Apparat dlya defibrillyatsii serdtsa)

PERIODICAL: Nauka i Zhizn', 1957, # 7, p 52 (USSR)

ABSTRACT: Electric shocks and a few heart diseases, like angina pectoris, can cause grave disturbances of cardiac activity, the so called fibrillation of the heart. N.L. Gurvich, A.A. Akopyan and I.A. Zhukov of the Laboratory of Experimental Physiology for the Revivication of the Organism of the USSR Academy of Medical Sciences in close cooperation with the All Union Electrotechnical Institute imeni V.I. Lenin have developed the defibrillator, an apparatus for the elimination of heart fibrillation. This device generates single electric impulses lasting 0.01 of a second each. The impulses cause a simultaneous stimulation of all fibers of the heart muscle, thus contributing to the restoration of their normal rhythmic contractions. The electric current applied ranges between 5 and 30 amperes. The new defibrillator has a few advantages over similar foreign constructions. One of them is the generation of single electric impulses which are not dangerous to the heart, permitting the use of higher tensions for defibrillation without opening the chest. The new apparatus

Card 1/2

ZHELEZNOV, Ye.

Pure air in a foundry. Zdorov'e 3 no.6:13 Je '57. (MIRA 10:7)
(PNEUMATIC-TUBE TRANSPORTATION)
(FOUNDRY MACHINERY AND SUPPLIES)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064630012-7"

ZHELEZNOV, YE.

AUTHOR: Zheleznov, Ye. 25-58-4-29/41

TITLE: An Apparatus for the Suturing of Nerves (Apparat sshivayet nervy)

PERIODICAL: Nauka i Zhizn', 1958, Nr 4, page 70 (USSR)

ABSTRACT: An instrument to suture nerves with the aid of 0.1 mm thick tantalum-wire clamps, designed by the Vsesoyuznyy nauchno-issledovatel'skiy institut eksperimental'noy khirurgicheskoy apparatury i instrumentov (The All-Union Scientific- Research Institute for Experimental Surgical Apparatus and Instruments), is being shown at the Brussels International Exhibition. This apparatus was experimentally and practically tested. Its production was assigned to the "Krasnogvardeyets" plant for medical instruments in Leningrad. There is 1 figure.

AVAILABLE: Library of Congress

Card 1/1 1. Surgical instruments

AUTHOR: ~~Zheleznov, Ye.~~ SOV/25-58-12-15/40

TITLE: Dihydrostreptomycine (Digidrostreptomitsin)

PERIODICAL: Nauka i zhizn', 1958, 25 Nr 12, p 42 (USSR)

ABSTRACT: The Scientific-Research Institute of Antibiotics of the Ministry of Public Health of the USSR has produced the preparation dihydrostreptomycine. This product has a somewhat different formula than streptomycine, is more stable in alkaline solutions, and has a lower toxic effect on the patient than streptomycine. The drug is applied intramuscular, from 0.5 to 1.0 g for adults.

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Dihydrostreptomycine SOV/25-58-12-15/40

ASSOCIATION: Nauchno-issledovatel'skiy institut antibiotikov ministerstva zdravookhraneniya SSSR (The Scientific-Research Institute of the Antibiotics of the Ministry of Public Health of the USSR)

Card 2/2

AUTHOR: Zheleznov, Ye. SOV/25-59-1-33/51

TITLE: For the Treatment of Burns (Dlya lecheniya ozhogov)

PERIODICAL: Nauka i zhizn', 1959, Nr 1, p 66 (USSR)

ABSTRACT: Special devices and apparatus have been developed in laboratories of the Nauchno-issledovatel'skiy institut eksperimental'noy khirurgicheskoy apparatury i instrumentov Ministerstva zdravookhraneniya SSSR (Scientific Research Institute of Experimental Surgical Apparatus and Instruments of the USSR Ministry of Health). For instance, a double-frame rotary bed equipped with rubber belts has been devised whereby the patient can receive treatment of the burnt parts without being moved. The same Institute elaborated an "electrodermatom" for taking the skin from donors, which is then transplanted to the burned person. A special apparatus for treating the burns with medicine has also been developed. The latter is based on the principle of a pulverizer, blood plasma with vitamin A, thrombin and a solution of antibiotics filled into glass cups. Connected by a system of metal and rubber tubes to an oxygen rubber bulb, the healing

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substances are sprayed on the burns, and develop a transparent film which, enriched by oxygen and vitamins, provides favorable conditions for the regeneration of the skin and at the same time is a protection against infection. All tests carried out with these devices proved to be successful, and their serial production has been started according to a resolution of the Tekhnicheskiy sovet Ministerstva zdravookhraneniya SSSR (Technical Council of the USSR Health Ministry). There are two photographs.

AUTHOR: Zheleznov, Ye. SOV/25-59-1-49/51

TITLE: None Given

PERIODICAL: Nauka i zhizn', 1959, Nr 1, p.79 (USSR)

ABSTRACT: The article deals with methods of coping with lead intoxications. Various metal-absorbing compounds, such as bio-sodium-calcium-chloride of ethylenediamintetraacetic acid, "complexin", etc., have been suggested by the Institut gigiyeny truda i professional'nykh zabolevanyy Akademii meditsinskikh nauk SSSR (Institute of Labor Hygiene and Professional Diseases of the USSR Academy of Medical Sciences). The Institut pitaniya Akademii meditsinskikh nauk SSSR (Institute of Alimentation of the USSR Academy of Medical Sciences) recommended the application of a dietetic therapy excluding all lactic and vegetable food. Tests carried out in this connection proved to be successful.

Card 1/1

AUTHOR: ~~Zheleznov, Ya.I.~~ SOV/140-58-1-6/21

TITLE: Some Sufficient Conditions for the Existence of Limit Cycles (Nekotoryye dostatochnyye usloviya sushchestvovaniya predel'nykh tsiklov)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy Ministerstva vysshego obrazovaniya SSSR, Matematika, 1958, Nr 1, pp 56 - 59 (USSR)

ABSTRACT: Theorem: The system

(1) $\dot{x} = y - F(x)\ ,\quad \dot{y} = -\,g(x)$

possesses a limit cycle, if 1. $xg(x) > 0$; $xF(x) > 0$, $|x| < \delta$

2. there exist $c > 0$ and M , so that $\overline{\lim\limits_{x\to\infty}}\left[F(x) + c\int\limits_0^x g(x)dx\right] < M$

3. for positive sufficiently large y_0 it holds :

$\underline{\lim\limits_{x\to -\infty}}\left[-F(x) - \int\limits_0^x \frac{g(x)dx}{y_0 - F(x)}\right] = -\infty$ 4. for negative y_1 with

sufficiently large $|y_1|$ it holds :

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$$\lim_{x \to \infty} \left[- F(x) - \int_0^x \frac{g(x)dx}{y_1 - F(x)} \right] = \infty .$$

Theorem: The condition 2. can be replaced by

$$\lim_{x \to -\infty} \left[F(x) - c \int_0^x g(x)dx \right] > - M .$$

There are 6 references, 5 of which are Soviet, and 1 is American.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S.M. Kirova (Ural Polytechnic Institute imeni S.M. Kirov)

SUBMITTED: November 10, 1957

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064630012-7"

ZHELEZNOV, Ye. I. Cand Phys-Math Sci -- (diss) "On the problem of the ~~shape~~ form of the ~~regions~~ field of attraction (of the position) of equilibriums of certain asymptotically stable systems.". Sverdlovsk, 1958, 11 pp (Min of Higher Education USSR. Ural Polytechnic Inst im S. M. Kirov), 100 copies. Bibliography, p.11 (23 titles). (KL, 13-58, 92)

ZHELEZNOV, Ye. I.

Sufficient conditions for the existence of limit cycles. Izv. vys.ucheb.zav.; mat. no.1:127-132 '57. (MIRA 12:10)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova. (Calculus)

ZHELEZNOV, Ye.I.

Shape of the domain of attraction of the equilibrium position of an asymptotic stable system. Trudy Ural. politekh. inst. no.113:26-34 '61. (MIRA 16:8)

(Differential equations)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002064630012-7"

ZHELEZNOV, Ye. S., Cand Tech Sci -- (diss) "A New Electric Track Homing ~~Device~~ Drive for the Feeding of Sphere-Buffing Machines". Len, 1958, 13 pp with ~~figs~~ graphs; 1 sheet of graphs (Mini~~stery~~ of Higher Education USSR. Moscow Order of Lenin Power Engineering Insti~~tute~~). 150 copies. (KL, 34-58, 100)

15

PHASE I BOOK EXPLOITATION SOV/5313

Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya

Osnovnyye voprosy vysokoproizvoditel'nogo shlifovaniya (Basic Problems in High-Productivity Grinding) Moscow, Mashgiz, 1960. 195 p. 3,000 copies printed.

Ed. (title page): Ye. N. Maslov, Doctor of Technical Sciences, Professor; Ed. (Inside book): A. P. Popov, Engineer; Tech. Ed.: V. D. [illegible]; Managing Ed. for Literature on Metalworking and Instrument Construction (Mashgiz): V. V. Rzhavinskiy, Engineer.

PURPOSE: This book is intended for technical personnel in metal grinding.

COVERAGE: This collection of articles deals with problems of efficient grinding of metals, the theory of grinding, the mechanics of the cutting action of grains, chip formation, and the effect of certain factors on the productivity of the grinding process. Emphasis is also given to the automation of the grinding process. A number of articles deal with the grinding of carbides and titanium alloys. No personalities are mentioned. References follow each article.

Dyakov, G. B. [Professor]. The Theory of the Working Cycle in Cylindrical Grinding as a Basis of High-Productivity Machining 87

The article is a study of the grinding operation and its regularities. Among the topics discussed are effect of processing factors on the quality of grinding, changes in cutting action of a grinding wheel over the wheel life and during operation, and the effect of wheel wear on productivity.

Polyakov, Ye. N. Principles of High-Productivity Grinding and Its Automation 109

The article deals with the principles of planning high-productivity grinding and the incorporation of a system of automation into grinding operations. Both subjects are discussed in connection with the reduction of cutting time, the achievement of process stability, and the improvement of the quality of the product.

Kondrat'yev, A. N. [Candidate of Technical Sciences, Docent]. Results of Investigation and Experience of Introducing High-Speed Grinding of Metals 121

The investigation of high-speed grinding with porous grinding wheels is discussed. Advantages, wheel life, and surface roughness of this type of grinding operation are included. The author recommends the accelerated construction of grinders and wheels for speeds of 80-90 m/sec.

Yedrov, S. N. [Candidate of Technical Sciences]. Results of an Investigation of Centerless Grinding With Wide Grinding Wheels 131

The author discusses the possibilities and advantages of introducing centerless grinding with wide (800-900 mm) wheels into mass production. The results of experimental operations with this type of wheel at the 1GPZ Plant are presented.

Sergeyev, V. I. [Candidate of Technical Sciences]. Characteristic Features of the Process of Grinding Carbides 144

Such characteristic features of the grinding of carbides as the use of silicate-bonded wheels, the formation of pitted waste instead of chips, and the occurrence of intensive oxidation are discussed. The relationships between temperature during grinding, pressure between wheel and work, speed, and productivity are outlined. The author suggests increasing productivity through higher speeds and more intensive oxidation.

(5)

PHASE I BOOK EXPLOITATION SOV/5291

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov v mashinostroyenii. 2d, Moscow, 1956

Avtomatizatsiya mashinostroitel'nykh protsessov. t. III: Obrabotka rezaniyem i obshchiye voprosy avtomatizatsii (Automation of Machine-Building Processes. v. 3: Metal Cutting and General Automation Problems) Moscow, Izd-vo AN SSSR, 1960. 296 p. (Series: Its: Trudy, t. 3) 4,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V. I. Dikushin, Academician; Ed. of Publishing House: V. A. Kotov; Tech. Ed.: I. F. Kuz'min.

PURPOSE: This collection of articles is intended for technical personnel concerned with the automation of the machine industry.

COVERAGE: This is Volume III of the transactions of the Second Conference on the Full Mechanization and Automation of Manufacturing Processes in the Machine Industry, held September 25-29, 1956. The transactions have been published in three volumes. Volume I deals with the hot pressworking of metals, and volume II, with the actuation and control of machines. The present volume deals with the automation of metal machining and work-hardening, and with general problems encountered in automation. The transactions on the automation of metal-machining processes were published under the supervision of F. S. Dem'yanok and A. N. Karatygin, and those on the automation of work hardening processes, under the supervision of E. A. Satel' and M. O. Yakobson. No personalities are mentioned. There are no references.

Automation of Machine-Building Processes (Cont.) SOV/5291

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AVAILABLE: Library of Congress

ZHELEZNOV, Ye. S., kand. tekhn. nauk; MIKHEL'KEVICH, V. N., aspirant

Effect of gaps in lateral feed mechanisms on the precision of the regulation of allowance yield speed. Izv. vys. ucheb. zav.; mashinostr. no.7:192-199 '62. (MIRA 16:1)

1. Kuybyshevskiy industrial'nyy institut.

(Grinding and polishing)
(Automatic control)

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AUTHOR: Zheleznov, Ye. Y.

TITLE: The form of the domain of attraction of the equilibrium position of an asymptotically stable system

PERIODICAL: Referativnyy zhurnal, Matematika, no. 3, 1962, 47, abstract 3B214. ("Tr. Ural'skogo poli[illegible]khn. in-ta", 1961, sb. 113, 26-34)

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TEXT: The linear transformation $\bar{\bar{x}} = x$, $\bar{y} = -bx + ay$ transforms the system of differential equations $\dot{x} = f_1(x) + ay$, $\dot{y} = f_2(x) + by$ to the form

$$\dot{x} = y - F(x), \quad \dot{y} = -g(x) \qquad (1)$$

where $F(x) = -f_1(x) - bx$, $g(x) = bf_1(x) - af_2(x)$. Of system (1) is required: $xF(x) > 0$ for $x \neq 0$; $xg(x) > 0$ for $x_2 < x < x_1$, with $x_2 < 0$, $x_1 > 0$; $xg(x) < 0$ for $x < x_2$ or $x > x_1$; $g(x_2) = g(0) = g(x_1) = 0$. Because the generalized stability conditions of Routh-Hurwitz are not met in this case, system (1) may not be stable in the

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The form of the domain of attraction ... S/044/62/000/003/025/092
C111/C222

large. The author examines the form of the domain of attraction of the origin and shows that two principally different cases have to be distinguished. In addition, the author examines the change in the form of the domain of attraction with the change of the parameters of the system expecially of coefficient a.

[Abstracter's note: Complete translation.]

Card 2/2

ZHELEZNOV, Yu., inzh.-ekonomist

Notes of an economist. Rech.transp. 23 no.9:57
S '64. (MIRA 19:1)

1. Gor'kovskoye otdeleniye Gosudarstvennogo instituta proyektirovaniya i izyskaniya na rechnom transporte.

ZHELEZNOV, Yu., inzh.-ekonomist

Unused capacities for the transportation of mineral building materials on the Volga River. Rech. transp. 24 no.11:13 '65. (MIRA 19:1)

1. Gor'kovskoye otdeleniye Gosudarstvennogo instituta proyektirovaniya i izyskaniya na rechnom transporte.

S/133/63/000/002/007/014
A054/A126

AUTHORS: Polukhin, P.I., Zheleznov, Yu.D., Polukhin, V.P., Radyukevich, L.V. Pratusevich, I.I., Nikolayev, V.A.

TITLE: The effect of technological factors on the profile section of thin strip mill rolls

PERIODICAL: Stal', no. 13, 1963, 146 - 152

TEXT: This problem has been studied at the Magnitogorskiy metallurgicheskiy kombinat (Magnitogorsk Metallurgical Combine), on continuous 1,200 mm four-high cold rolling mill rolls and 1,450 mm hot rolling mill rolls, in 1961 - 1962. The article is a summarizing report on the theoretical and experimental research relating to the changes of the profile section of work rolls and backing rolls due to heat effects (convexity at the center of the roll surface), to wear and tear of the rolls, etc. Measures to prevent these phenomena involve the balancing of heat effects by modifying the intensity of cooling accordingly, preferably with an automatic regulation, by means of a pickup signaling the distribution of expansion over the width of the strip and ensuring that cooling at the edge parts is more intense than the heat release. For backing rolls this can be obtained

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by giving them a special profile section (clipping or grooving at the edges); moreover, by giving the roll barrel a surface of varying wear resistance, adjusted to the forces applied to it (by hard-surfacing with hard alloys). The measures recommended are covered by Author's Certificate No. 142,269, 1961 (Ref. 5) and No. 151976, 1962 (Ref. 3). There are 7 figures.

ASSOCIATIONS: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys); Magnitogorskiy metallurgicheskiy kombinat (Magnitogorsk Metallurgical Combine)

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1.1300 also 1496, 1045, 1454

S/148/60/000/011/007/015
A161/A030

AUTHORS: Polukhin, P. I.; Zheleznov, Yu. D.; Polukhin, B.P.

TITLE: Optical investigation of stresses and strains in four-high mill rolls

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 11, 1960, 71 - 80

TEXT: The purpose of the investigation was the determination of combined elastic deformation in the work and support rolls and the verification of existing theories on which the various existing rolls calculating methods are based , with a view to raising the accuracy requirements of the evennes of the cold rolled thin sheet thickness. The experiments were carried out in the stress research laboratory of the Kafedra ispol'zovaniya vodnoy energii Moskovskogo inzhenerno-stroitel'nogo instituta (Chair of Water Power Utilization of the Moscow Construction Engineering Institute). The conclusions made in experiments are not final. It is mentioned that stresses through the rolls, and elastic deformation components

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